# Automated ATP Testing Eliminates the Labor Intensity and Subjective Interpretation Errors Associated with Media-Based Yeast Detection Methods for UHT and ESL Products

## Objective

Traditionally, agar plate microbiology techniques have been used for the detection of microorganisms in UHT/ESL final release protocols. But this method poses a number of both workflow and practical challenges ranging from labor-intensive media preparation and agar batch variability (pH drift, media darkening, and impacted recovery) to interpretation deficits such as viable but not culturable (VNC) growth at one extreme and growth too numerous to count (TNTC) at the other.

PetriFilm™ Rapid Yeast and Mold Count Plates are a traditional media-based, agar plate alternative for the detection of these organisms in UHT and ESL products. Although preparation and read challenges have been addressed to some degree, this method requires a minimum incubation time of 48-60 hours at 25-28 °C, can experience enzymatic interference from food products (e.g., cultured products) and remains vulnerable to VNC and TNTC scenarios.

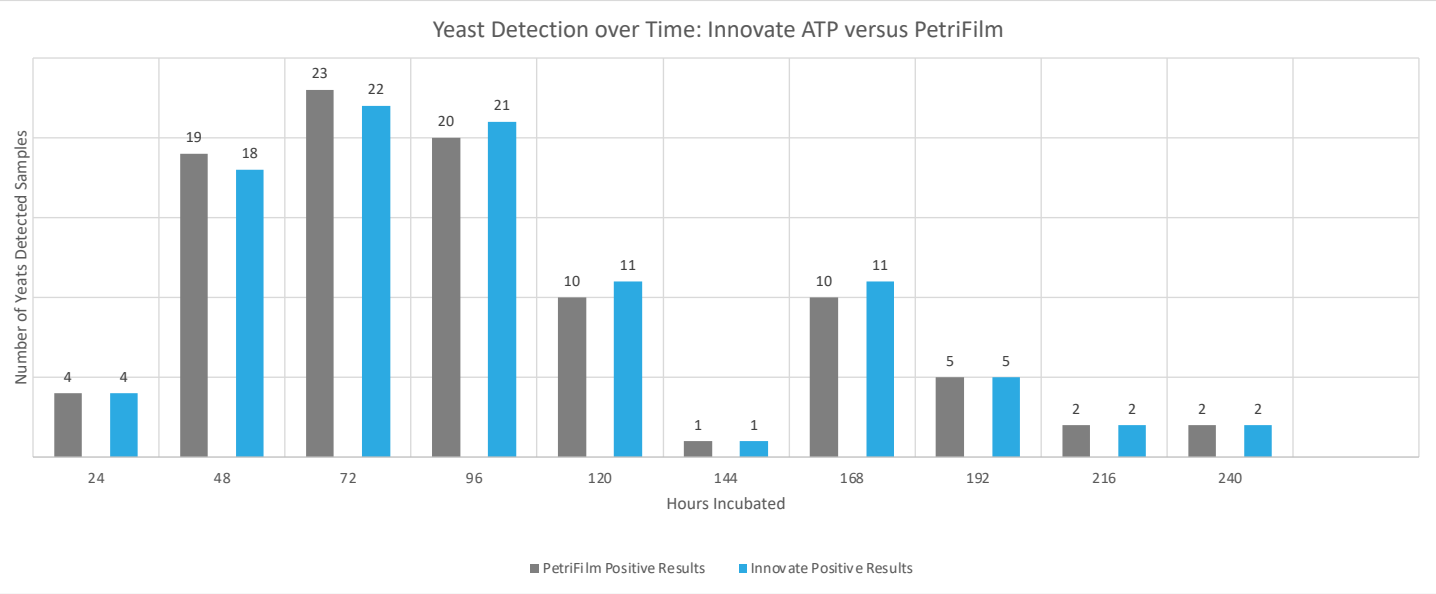
This comparative study evaluates the Hygiena™ Innovate System with ATP-based RapiScreen™ technology as an expedient, automated option for UHT and ESL product release testing in the food industry.

## Method

Twenty-nine UHT and ESL products from 7 manufacturers were spiked with a mixture of *Saccharomyces*, *Zygosaccharomyces*, *Candida* and *Toluraspora* yeasts with a mean of 159 CFU per pack (range: 14-1600 CFU). Food matrices included 12 protein-based products, 9 dairy-based products and 8 non-dairy, plant-based products for a total of 330 data points. A Probability of Detection analysis was conducted for the Innovate System versus PetriFilm counts for each 24-hour period over 10 consecutive days.

## Results

The Innovate System yeast detection rates demonstrated 97.9% sensitivity and 100% specificity compared with the PetriFilm media-based detection method.




Moreover, the calculated Probability of Detection (%PoD) for the Innovate System ranged from 95-110% over the testing period. Probability above 100% was calculated based on accurate ATP detection of a known contaminant compared with zero detection by PetriFilm, the comparative (traditional) method.

## Conclusions

Although this analysis reflected relative equivalence with the traditional, agar-based detection method, ATP detection as a quantitative indicator of growth demonstrated clear advantages. The Hygiena Innovate System powered by RapiScreen ATP detection offers true quantification without the necessity to further dilute and retest. Furthermore, variability of agar preparation and visual results interpretation challenges are eliminated.

Hygiena's automated Innovate System offers a robust ATP-based solution that demonstrates strong correlation with traditional agar-based plating techniques for yeast detection in UHT and ESL products. The Innovate System provides the additional benefits of objective, enumerated RLU values well suited for investigating contamination sources and fulfilling true quantification requirements as directed by stringent product release protocols.